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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,391	10/05/2001	Allen Robert Heitman	SJ09-2001-0096	5132

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INTERNATIONAL BUSINESS MACHINES CORPORATION
5600 COTTLE ROAD, DEPT. L2PA/010
INTELLECTUAL PROPERTY LAW
SAN JOSE, CA 95193-0001

EXAMINER

KIM, HONG CHONG

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 05/26/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/972,391

Applicant(s)

HEITMAN ET AL.

Examiner

Hong C Kim

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-23 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1. Claims 1-23 are presented for examination.
2. Receipt is acknowledged of information disclosure statement filed on 1/25/02, which the statement has been placed of record in the file. Information disclosed and listed on PTO 1449 was considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Nahum US Patent Pub. No. 2003/0236945.

As to claim 1, Nahum discloses the invention as claimed. Nahum discloses a storage area network (SAN) (Fig. 1) comprising one or more regions forming at least a portion (Fig. 1 Ref 2, Network Switch(SAN) reads on this limitation) of the SAN, each region having one or more components (block 5, virtual volume), the components including one or more digital data processors (Fig. 1 Ref. 1) and one or more storage devices (Fig. 1 Ref. 4); one or more scanners that collect, for each region, information regarding the components and their interconnectivity (block 69 and Fig. 13); a manager, coupled to the one or more scanners, that responds to the collected

information to determine a topology of a portion of the SAN spanned by the regions (Fig. 1 Refs. 8 and 3).

As to claim 2, Nahum discloses the invention as claimed above. Nahum further discloses the manager identifies one or more storage device ports common to two or more regions (block 32).

As to claim 3, Nahum discloses the invention as claimed above. Nahum further discloses the manager identifies regions having one or more common storage devices as a virtual SAN (block 32).

As to claim 4, Nahum discloses the invention as claimed above. Nahum further discloses the regions comprise one or more host digital data processors coupled for communication with one or more storage devices by a first network (blocks 32 and 60-61).

As to claim 5, Nahum discloses the invention as claimed above. Nahum further discloses the scanners execute on host digital data processors (Figs. 13 and 14).

As to claim 6, Nahum discloses the invention as claimed above. Nahum further discloses the manager executes on a manager digital data processor that is coupled to the host digital data processors by via a second network (blocks 60-61).

As to claim 7, Nahum discloses the invention as claimed above. Nahum further discloses the first network comprises fiber channel media (block 60).

As to claim 8, Nahum discloses the invention as claimed above. Nahum further discloses the second network comprises an IP network (block 60).

As to claim 9, Nahum discloses the invention as claimed. Nahum discloses a storage area network (SAN) (Fig. 1) comprising a plurality of hosts, each coupled via an interconnect with a plurality of storage units (Fig. 1), the hosts and storage units forming a plurality of regions (Fig. 1 Ref 2, Network Switch (SAN) reads on this limitation), each comprising one or more hosts (Fig. 1 Ref. 1) in communication coupling with one or more storage devices (fig. 1 Ref. 4) over the interconnect, a manager digital data processor that maintains a topological representation of the SAN (Fig. 1 Refs. 3 and 8), one or more scanners (block 69 and Figs. 13 & 14), in communication coupling with the hosts and with the manager digital data processor, that determine the hosts and storage units in each region, the manager digital data processor determining, as a function of the information collected by the scanners, a topology of a portion of the SAN spanned by the regions (block 69 and Figs. 13 & 14).

As to claim 10, Nahum discloses the invention as claimed above. Nahum further discloses the manager digital data processor identifies, as a function of the information

collected by the scanners, the hosts and storage units that make up the portion of the SAN spanned by the regions (block 69 and Figs. 13 & 14).

As to claim 11, Nahum discloses the invention as claimed above. Nahum further discloses the manager digital data processor identifies, as a function of the information collected by the scanners, the interconnectivity of the hosts and storage units that make up the portion of the SAN spanned by the regions (block 69 and Figs. 13 & 14).

As to claim 12, Nahum discloses the invention as claimed above. Nahum further discloses the manager digital data processor identifies one or more virtual SANs (block 32) as a function of the information collected by the scanners, each virtual SAN comprising at least the storage devices included within a set of regions (block 5, virtual volume), each of which has one or more common storage device ports with at least one other region of that set (block 68 and Figs. 13 & 14)..

As to claim 13, Nahum discloses the invention as claimed above. Nahum further discloses a plurality of agents in communication with the manager digital data processor, wherein each agent is associated with a host, and wherein each scanner is associated with an agent (block 123, polling mechanism).

As to claim 14, Nahum discloses the invention as claimed above. Nahum further discloses the regions comprise one or more host digital data processors coupled for

communication with one or more storage devices by a first network (block 60).

As to claim 15, Nahum discloses the invention as claimed above. Nahum further discloses the scanners execute on host digital data processors (Fig. 1 Refs. 6 and 3).

As to claim 16, Nahum discloses the invention as claimed above. Nahum further discloses the manager digital data processor that is coupled to the host digital data processors via a second network (block 60).

As to claim 17, Nahum discloses the invention as claimed above. Nahum further discloses the agents identify attributes of the storage units coupled to the respective hosts via one or more adapters on the respective host (block 123).

As to claim 18, Nahum discloses the invention as claimed above. Nahum further discloses the zones are defined by any of switches or switch-like interfaces on any of the first network, the host digital data processors and the storage devices (Fig. 1 Ref 2, Network Switch (SAN) reads on this limitation).

As to claim 19, Nahum discloses the invention as claimed above. Nahum further discloses the first network comprises fiber channel media (block 60).

As to claim 20, Nahum discloses the invention as claimed above. Nahum further discloses the second network comprises an IP network (block 60).

As to claim 21, Nahum discloses the invention as claimed. Nahum discloses a method of determining topology (blocks 123-124) of at least a portion of a storage area network (SAN) spanned by one or more regions (Fig. 1 Ref 2, Network Switch (SAN) reads on this limitation), comprising: identifying, for each region, one or more components (block 5, virtual volume) contained within that region and their connectivity to generate information regarding topology of that region, and collating the information regarding topology of the one or more regions to determine topology of the portion of the SAN spanned by those regions (blocks 123-124).

As to claim 22, Nahum discloses the invention as claimed above. Nahum further discloses the step of identifying regions having one or more common endpoints, where the endpoints include any of components and component ports (blocks 32, 123 and 124).

As to claim 23, Nahum discloses the invention as claimed above. Nahum further discloses the step of identifying as a SAN, a set of regions each of which has one or more common storage device ports with at least one other region of that set (block 32).

Conclusion

Art Unit: 2186

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

Applicants are requested to number each line of each claim starting with line number one to provide easier communication in the future.

When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. ' 1.111(c).

When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong C Kim whose telephone number is 703-305-3835. The examiner can normally be reached on M-F 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt M Kim can be reached on (703) 305-3821. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to TC-2100:
703-872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/972,391
Art Unit: 2186

Page 10

A handwritten signature in black ink, appearing to read 'H Kim', with a stylized flourish at the end.

H Kim
Primary Patent Examiner
May 24, 2004